

Carryover Monitoring System™



U.S. Patent Number 5,010,827

Features & Benefits

- Optical sensor to measure luminous particles (carryover) at the furnace exit.
- Provides a 4-20 mA and a local display output signal. Can be input to plant Distributive Control System or The Fireside Advisor® System.
- Sensors can be installed in multiple locations to detect variations in fouling over the boiler width.
- Identifies conditions likely to result in plugging problems, and likely locations, before they become critical.
- Improves efficiency by indicating abnormal boiler conditions and combustion regions.

Applications

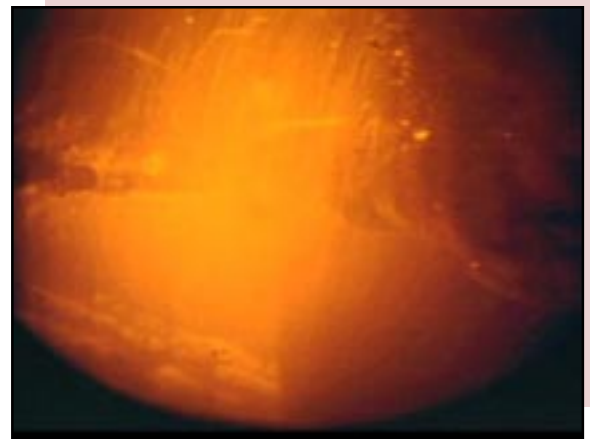
Pulp & Paper Recovery: The Carryover Monitoring System™ (CMS) can be used by operators to identify instances, operating conditions, and regional variations of carryover of unburned char to the convection section of the boiler. Reducing the carryover of unburned char particles can reduce fouling and plugging, and increase boiler run times.

Utility: CMS can be used on stoker fired, bubbling bed and fluidized bed boilers to monitor carryover of unburned fuel particles to the convection section of the boiler. Reducing the carryover of unburned fuel particles can reduce fouling and increase boiler run times.

Carryover Monitoring System

Fluctuations in black liquor firing or combustion air can result in unburned char particles or carryover being entrained in the flue gas and deposited on tubes in the convection pass of the boiler. Entrainment of char and smelt is one of the major causes of convection pass plugging.

The CMS monitors on-line, luminous particle activity in the boiler. By employing multiple sensors to detect particle activity at selected locations in the upper boiler, the CMS allows operators to monitor particle carryover in several locations at the same time, a feature no other system offers.



Carryover particles collecting on superheater

Operators can track particle activity frequency to identify a boiler problem, and ensure that changes are made in operating conditions to reduce the carryover. The patented CMS is a perfect tool for anticipating gas side tube pluggage problems and correcting them before a critical problem occurs. Recovery boiler availability will be increased as the need for chill and blows and waterwashing is reduced.

CMS can also be used on stoker fired and bubbling bed boilers to monitor carryover of unburned carbon to the convection pass of the boiler. Variations in firing conditions can lead to increased carryover of unburned particles leading to pluggage in the convection passes and lower efficiency due to incomplete combustion.

Technical Specifications

Power Requirement:

120/240 VAC, 50/60 hz, 2 amp

Cooling Requirement:

15-20 psig, 15 scfm compressed air at <130°F

Operating Requirement:

0-185°F, 0-90% relative humidity

Measurement Field-of-View: 8 degree cone

CMS Data Readout Update Period:

1 second to 15 minutes (adjustable): 5 seconds typical

Dynamic Response:

10Hz to 10,000Hz

Weight: 15 lbs

Data Outputs: Analog

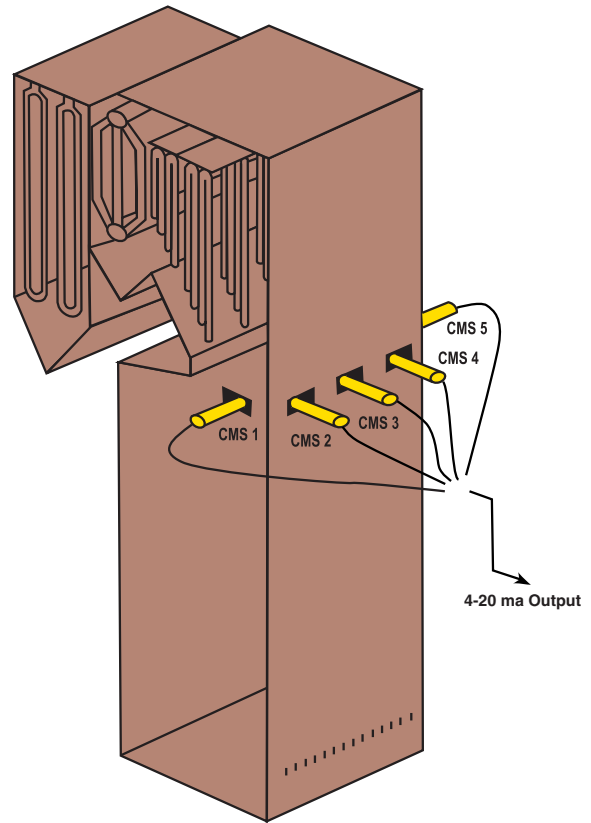
Self-powered or loop powered

Current: 4-20 mA, 1500 volt isolation

Lowest Measurable Count: 1 count/sec.

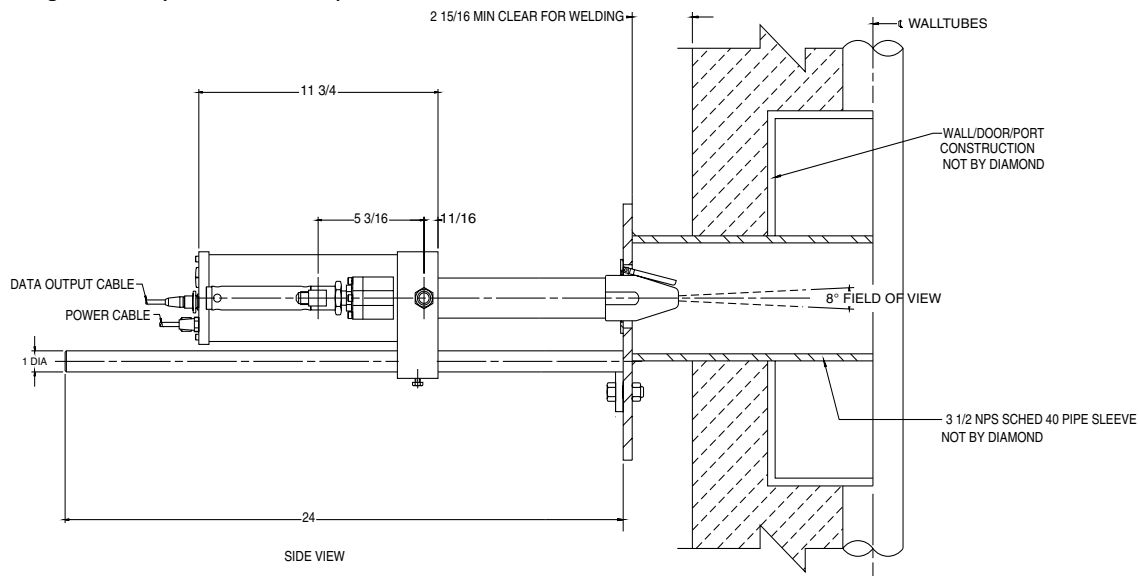
Highest Measurable Count: 100 counts/sec.

Safety Standards: CE Certified



Typical installation of CMS systems positioned at bull nose level

Mounting Assembly of the CMS System



For engineered solutions to your specific boiler cleaning needs, contact your local Diamond Power representative or call our main office at:

P.O. Box 787 • Lancaster, OH 43130 • Phone: (800) 700-2791 • Fax: (740) 687-4201

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